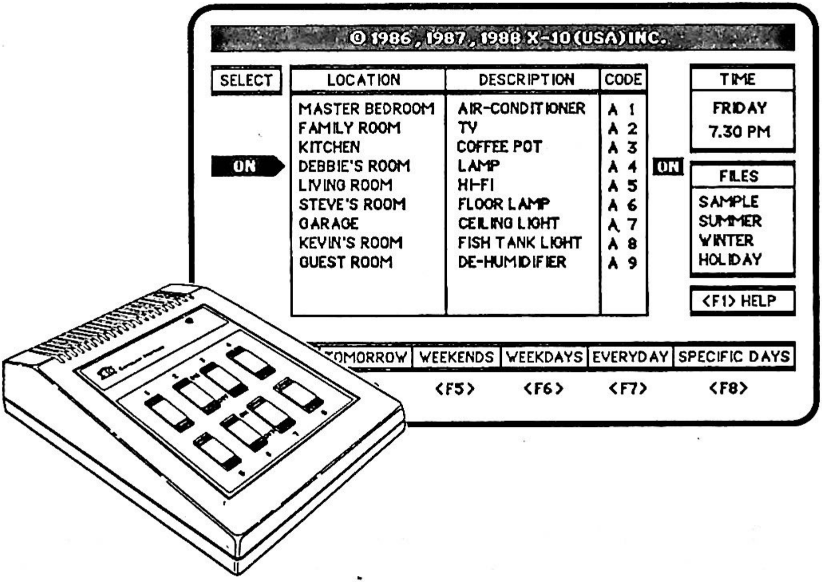
X-10® NUMBER ONE IN HOME CONTROL

CP290 HOME CONTROL INTERFACE WITH SOFTWARE FOR IBM™ and COMPATIBLES



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SELECT	LOCATION	DESCRIPTION	CODE	
	MASTER BEDROOM	AIR-CONDITIONER	A 1	
	FAMILY ROOM	TV	A 2	
	KITCHEN	COFFEE POT	A 3	
ON ▶	DEBBIE'S ROOM	LAMP	A 4	ON
	LIVING ROOM	HI-FI	A 5	
	STEVE'S ROOM	FLOOR LAMP	A 6	
	GARAGE	CEILING LIGHT	A 7	
	KEVIN'S ROOM	FISH TANK LIGHT	A 8	
	GUEST ROOM	DE-HUMIDIFIER	A 9	

TIME
FRIDAY
7.30 PM

FILES
SAMPLE
SUMMER
WINTER
HOLIDAY

<F1> HELP

TOMORROW	WEEKENDS	WEEKDAYS	EVERYDAY	SPECIFIC DAYS
	<F5>	<F6>	<F7>	<F8>

OWNER'S MANUAL

2 TABLE OF CONTENTS

Introduction ---------- 4

Hardware Section.

What It Does/How It Works ---------- 6
System Diagram ---------- 7
Required Equipment ---------- 8
Hardware Set-Up ---------- 9

Software Section.

Preparing The Disk ---------- 11
Set Time ---------- 12
Change Base Housecode ---------- 13
Installing Module Information ---------- 14
Erase ---------- 19
Operation ---------- 20
    Now ---------- 22
    Today ---------- 22
    Tomorrow ---------- 22
    Weekends ---------- 23
    Weekdays ---------- 23
    Everyday ---------- 23
    Specific Days ---------- 24
Grouping ---------- 25
Review ---------- 27
Exiting The Program ---------- 29
Saving Files To Disk ---------- 30
Printing Files ---------- 31
Manual Operation ---------- 32
Demo Mode ---------- 33

Setting Com Port and Display Colors ---------------------------- 34
Glossary Of Terms -- 35
This Is X-10 --- 40
Some Don'ts -- 42
Troubleshooting -- 43

Utility Program Reference Section.

Introduction --- 45
Using The Utility Program -------------------------------------- 46
Variables -- 47
Sub-Routine Locations -- 48
Initializing The Communications Port --------------------------- 49
Setting The Real Time Clock ------------------------------------ 50
Reading The Real Time Clock ------------------------------------ 51
Setting The Base Housecode ------------------------------------- 52
Sending An Instant X-10 Code ----------------------------------- 53
Downloading Graphics Data -------------------------------------- 56
Uploading Graphics Data -- 57
Downloading Timer Events --------------------------------------- 58
Uploading Timer Events --- 60

Warranty --- 61
Software License and Warranty ---------------------------------- 62
FCC Caution -- 63

4 INTRODUCTION

The ***X-10*** ® Home Control Interface can deter intruders by making your home look and sound lived in whether or not you are there. You never have to come home to a dark house again, or leave the outside lights on all day to get the key in the door at night. The Interface can turn the outside lights on for you.

It can wake you up to stereo or TV news, light up your bedroom, hallway, bathroom; start the coffee, start your central heating or air conditioning, warm up the curlers, and all before you're even out of bed; but it's smart enough not to wake you up on weekends.

At night it can lower the heat, play music or your favourite late night TV show for as long as you set it, and can first dim and later turn out the lights automatically.

This manual is divided into two sections...

The Hardware section describes how to set up the Interface and the various Modules and how to manually operate the Modules from the Interface (see page 41 for types of Modules available). It is recommended that you set up your Interface to control your Modules manually before connecting the Interface to your computer.

If you already own other *X-10* components, and are adding the Interface to your system, you may wish to skip the Hardware section and go directly to the Software section of the manual which starts on page 11. The Software section describes how to program the Interface. If you wish to skip the Hardware section, just plug in the Interface where you intend to leave it, set your existing Modules to Housecode "A" and a Unit Code between 1 and 8 (you can change this later) and check that your Modules work manually from the keys on the Interface. Then go to page 11.

A Word of Caution...

Keep in mind that your Home Control Interface will always turn lamps and appliances on or off the instant you press the rocker keys or at the times you have previously programmed it to do so. That's obvious - but there can be some unexpected consequences.

For example, an empty coffee pot can be remotely turned on. If that should happen, your coffee pot may be damaged from overheating. If an electric heater is turned on by remote control while clothing just happens to be draped over it, a fire could result.

Therefore, always be aware of what appliance you are turning on or off so that potentially dangerous situations will not occur.

WHAT IT DOES / HOW IT WORKS

The Home Control Interface tells the Modules what to do. Command signals are sent over your existing house wiring to the Module or Modules of your choice. The Modules respond to the command signals. You plug lamps into Lamp Modules, appliances into Appliance Modules, replace wall switches with Wall Switch Modules and replace wall outlets with Wall Receptacle Modules.

The Lamp Module turns on and off or dims and brightens any incandescent lamp up to 300 watts. The Appliance Module turns an appliance like a TV, window fan or stereo on and off. It can also be used for a lamp - but cannot dim it. The Wall Switch Module turns on and off or dims and brightens any incandescent light up to 500 watts, which is normally operated by a wall switch. The Wall Receptacle Module is rated for 15A (unconditional) and turns on or off ANY light or appliance which normally plugs into a regular 15A wall outlet.

You can also add other types of *X-10* Controllers to your system. See pages 7, 40 and 41.

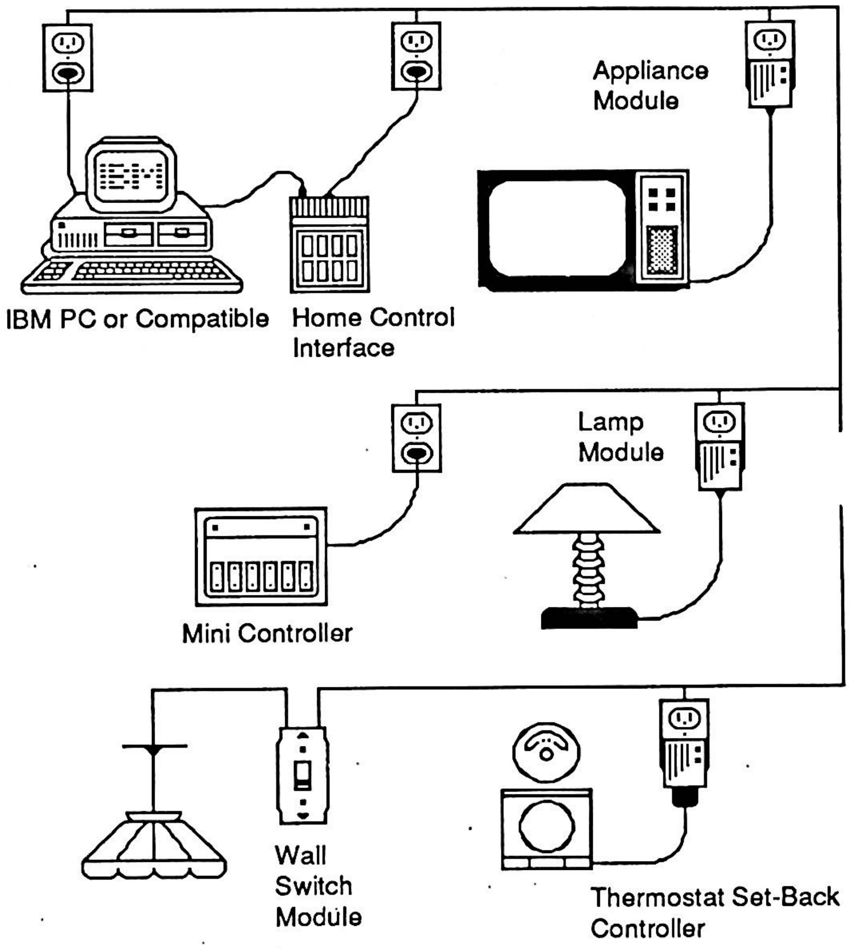

Appliance Module
IBM PC or Compatible
Home Control Interface
Lamp Module
Mini Controller
Wall Switch Module
Thermostat Set-Back Controller

Figure 1.

8 REQUIRED EQUIPMENT

The *X-10 Home Control Interface*, Model No. CP290P works with the *X-10 Home Control Software* (included) and *X-10* Modules (sold separately). You will also need the following:

- IBM PC, PCXT, or IBM Compatible.
- Serial card (RS-232).
- Monitor, Monochrome or Color.
- 9 volt alkaline battery (for battery back-up, see below).
- *X-10* Modules (quantity and type are dependent upon which lights and appliances you wish to control. See page 41 for types of Modules available).

Note: If you install a 9V alkaline battery you will have a battery back-up system. If a power failure should occur, the Interface will run on battery back-up. This will be indicated by the flashing of the red transmit light approximately every 5 seconds. If the Interface is without power for more than 100 hours you will lose all programmed information you have entered. It is good practice to remove the battery if the Interface is unplugged and not used for a long period of time. Replace the battery at least once a year.

The software section of this manual deals with the programming of the Interface using the software supplied. The hardware section (this section) deals with the manual setup of both the Interface and the Modules (sold separately).

1. Plug the Interface into a 120V AC outlet, **where you intend to leave it after programming from your PC** (by your bedside for example).

2. Install a 9V Alkaline battery (sold separately) in the battery compartment at the back of the Interface. This protects your program in the event of a power outage, for up to 100 hours

3. Check that the red transmit light on the Interface goes when you press each key.

4. Install Modules as per the instructions supplied with them. Remember to turn off the breaker before installing Wall Switch Modules and Wall Receptacle Modules.

5. Set the red Housecode dial on each Module to "A" . You can change this later from the computer but when you first plug the Interface in, its Housecode will be "A".

6. Set the black Unit Code dial on each Module to a number between 1 and 8 (you can change these numbers later).

7. Turn on the power switch on lamps or appliances you wish to control then plug the lamps and appliances into the Modules and plug the Modules into their outlets. **Don't use the Lamp Module or Wall Switch Module for appliances.**

8. To turn a Module ON or OFF, press the ON or OFF side of the rocker key corresponding to the Unit Code of the Module to be controlled. Check that all installed Modules can be controlled from the rocker keys on the Interface. Refer to Troubleshooting section if this doesn't happen.

9. Move the interface to an outlet near your PC (if it isn't near it already). Remember you can program the Interface from your PC and then disconnect it and move it back to where it was plugged in for the manual tests above. The battery back-up will protect your program while you move the interface to another room.

10. Connect the Interface to the **RS-232** port on your PC using the cable supplied. You will need a 25 pin cable or a 9 pin cable, and may need an adapter (if the connector on your computer doesn't match the cable supplied).

11. Prepare the disk (if you want to make it a "bootable" disk) as described on the next page. If you have a hard drive, you can just copy all the files from the X-10 disk into a subdirectory on your hard drive if you prefer.

PREPARING THE DISK

If you don't have a hard drive, and want to make the X-10 disk a bootable disk, you will need to transfer DOS to it (**prepare** it). You only do this **once**.

A. Insert a copy of DOS 2.0 or 2.1 into drive A.
B. Turn the computer on.
C. Wait about 30 seconds for the prompt asking you to enter the New Date. Enter the new date in the format shown e.g. 2-15-91, then press RETURN.
D. You are then asked to enter the New Time. Enter this in the format shown e.g. 15:45, then press RETURN.
E. Insert the *X-10 Home Control* program disk into drive B.
F. Type **SYS B:** then press RETURN.
G. Type **COPY COMMAND.COM B:**
Then press RETURN.

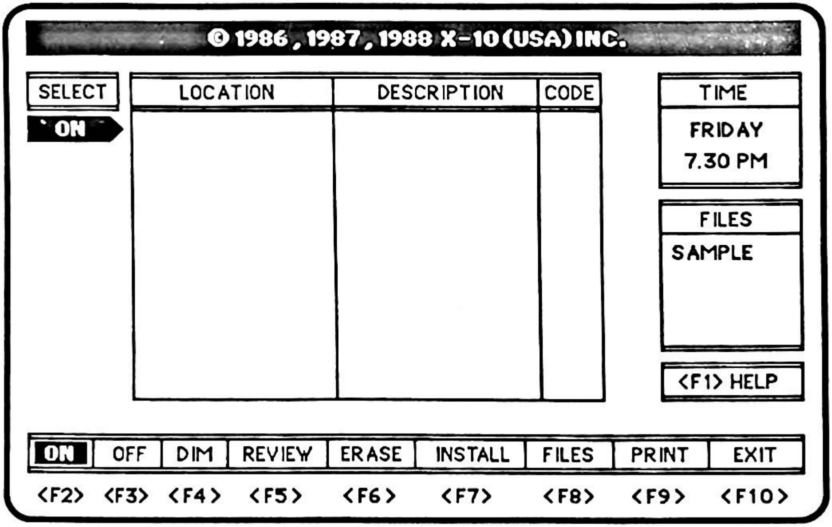
The message "1 FILE COPIED" will appear. The DOS transfer is now complete. The *X-10 Home Control* disk is **not** copy protected. It is recommended that you make back-up copies of the **prepared** disk and keep them in a safe place.

Remove the DOS disk from drive A. Remove the *X-10 Home Control* disk from drive B and place it in drive A. If the computer is off, just power it on with the disk in drive A. If the computer is on and in DOS, type **X10** and press RETURN to run the program.

Note: If you are using DOS 3.X, you will need to format a double sided disk and copy DOS and all the files from the *X-10 Home Control* disk to the double sided, formatted disk.

12 SET TIME

When you load the program the screen shows you the time stored **in the interface.** If the interface has been unplugged (with no battery fitted), the time will be wrong. In this case type in the correct time in the format shown and then press RETURN. If the time displayed is correct, just accept it by pressing RETURN. If you don't change the time the screen shown in Figure 2 will be displayed. If however, you do change the time, the new time will be stored in the interface and the program will then ask you if you want to change the BASE HOUSECODE (see page 13).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TIME
FRIDAY
7.30 PM

FILES
SAMPLE

SELECT
ON
LOCATION
DESCRIPTION
CODE
<F1> HELP
ON
OFF
DIM
REVIEW
ERASE
INSTALL
FILES
PRINT
EXIT
<F2>
<F3>
<F4>
<F5>
<F6>
<F7>
<F8>
<F9>
<F10>

Figure 2.

CHANGE BASE HOUSECODE

If you change the time when you first load the program, you will then be asked if you want to change the BASE HOUSECODE. The Base Housecode is the Housecode on which the "Rocker Keys" on the interface operate. This will normally be "A" when you first power up the interface. You may wish to leave it set to "A" if you have tested your Modules to operate manually from the keys on the interface (so you don't have to change the codes on your Modules). However, if you do wish to change the BASE HOUSECODE select [Y]es.

You are then warned that changing the BASE HOUSECODE will erase all the information in the Interface, but you presumabl don't have anything programmed at this point, so continue wi the change and enter the letter for the new Housecode. Th screen shown in figure 2 (page 12) will then be displayed.

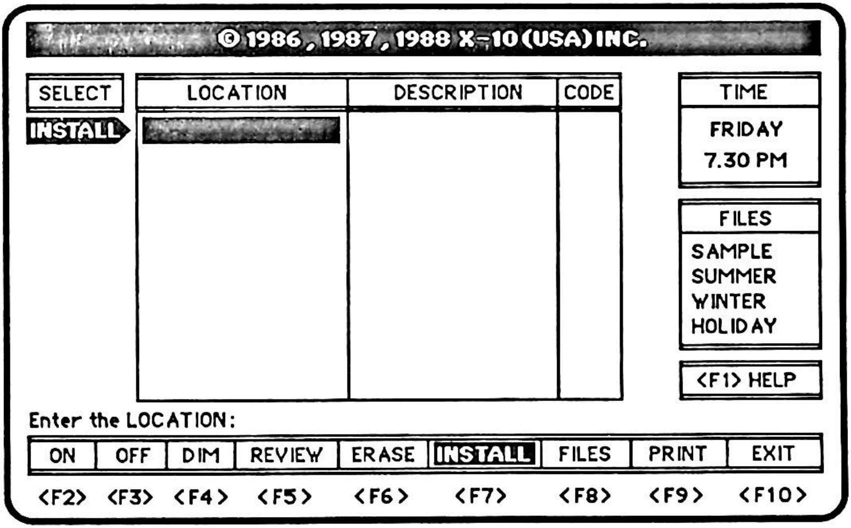
Note. This is the only way you can change the BASE HOUSECODE i.e. by re-loading the program.

14 INSTALLING MODULE INFORMATION

After you have set the clock in the interface and set the BASE HOUSECODE, you are ready to enter the information about the lights and appliances you wish to control; i.e. what you wish to control and where it is in your home. This information helps you to identify what you are controlling. This information is entered in the INSTALL mode.

Under the heading SELECT, you will notice a POINTER. Use the UP and DOWN cursor keys to move the POINTER to the cell you wish to enter information into. Use the LEFT and RIGHT cursor keys to highlight INSTALL and then press RETURN. Alternatively you can press <F7> to select INSTALL (don't press RETURN if you press <F7>).

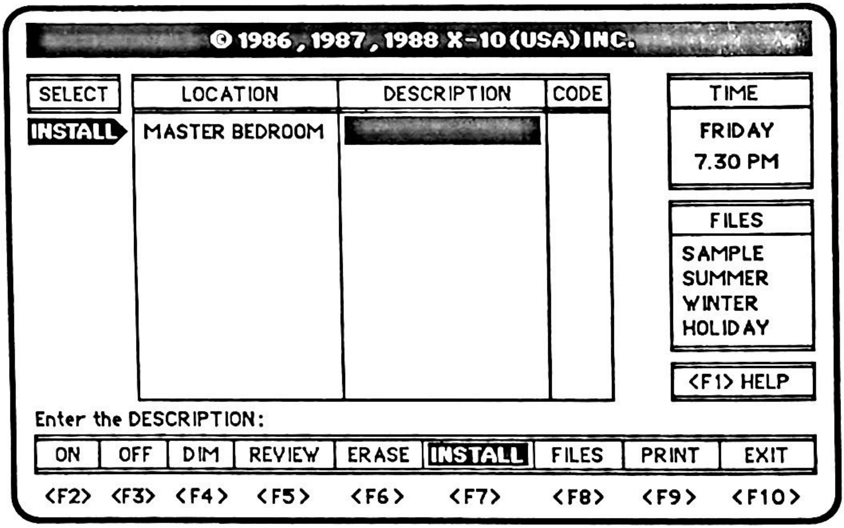
You will now see a prompt which asks you to "Enter the LOCATION". You simply type in the location of the light or appliance you wish to install; i.e. LIVING ROOM, DINING ROOM, BEDROOM etc. You can use any name you wish and then press RETURN. See Figure 3.


© 1986, 1987, 1988 X-10 (USA) INC.
SELECT
INSTALL
LOCATION
DESCRIPTION
CODE
TIME
FRIDAY
7.30 PM
FILES
SAMPLE
SUMMER
WINTER
HOLIDAY
<F1> HELP
ON <F2>
OFF <F3>
DIM <F4>
REVIEW <F5>
ERASE <F6>
INSTALL <F7>
FILES <F8>
PRINT <F9>
EXIT <F10>

Enter the LOCATION:

Figure 3.

The prompt then asks you to "Enter the DESCRIPTION". You then type in the name of the light or appliance you wish to install; i.e. TABLE LAMP, TV, STEREO, PORCH LIGHT etc., you can call the light or appliance anything you wish and then press RETURN. See Figure 4.


© 1986, 1987, 1988 X-10 (USA) INC.
SELECT
INSTALL
LOCATION
DESCRIPTION
CODE
TIME
FILES
SAMPLE
SUMMER
WINTER
HOLIDAY
<F1> HELP
ON
OFF
DIM
REVIEW
ERASE
INSTALL
FILES
PRINT
EXIT
<F2>
<F3>
<F4>
<F5>
<F6>
<F7>
<F8>
<F9>
<F10>

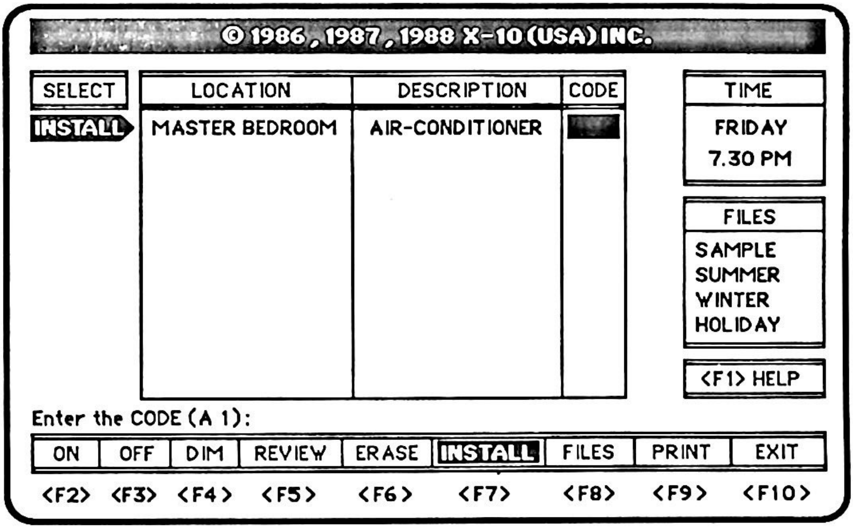
MASTER BEDROOM

FRIDAY
7.30 PM

Enter the DESCRIPTION:

Figure 4.

The prompt then says "Enter the CODE". The code shown will be the next one available, you can select this by pressing RETURN or you can type in the letter (A thru P) and the number (1 thru 16) as you wish, then press RETURN. You have now installed your first light or appliance. See Figure 5.



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SELECT
INSTALL
TIME
FILES
<F1> HELP
ON
OFF
DIM
REVIEW
ERASE
INSTALL
FILES
PRINT
EXIT
<F2>
<F3>
<F4>
<F5>
<F6>
<F7>
<F8>
<F9>
<F10>

LOCATION	DESCRIPTION	CODE
MASTER BEDROOM	AIR-CONDITIONER	

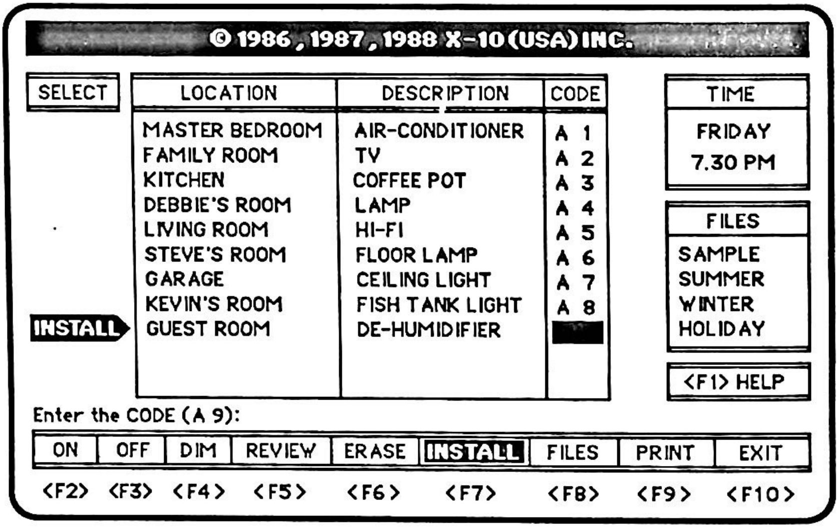
FRIDAY
7.30 PM

SAMPLE
SUMMER
WINTER
HOLIDAY

Enter the CODE (A 1):

Figure 5.

You can then move the POINTER down to the next cell and repeat the above steps to install any other lights or appliances you wish to control (up to 256). The screen will scroll up after you have entered 15 cells. See Figure 6.



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LOCATION	DESCRIPTION	CODE
MASTER BEDROOM	AIR-CONDITIONER	A 1
FAMILY ROOM	TV	A 2
KITCHEN	COFFEE POT	A 3
DEBBIE'S ROOM	LAMP	A 4
LIVING ROOM	HI-FI	A 5
STEVE'S ROOM	FLOOR LAMP	A 6
GARAGE	CEILING LIGHT	A 7
KEVIN'S ROOM	FISH TANK LIGHT	A 8
GUEST ROOM	DE-HUMIDIFIER	

TIME

FRIDAY
7.30 PM

FILES

SAMPLE
SUMMER
WINTER
HOLIDAY

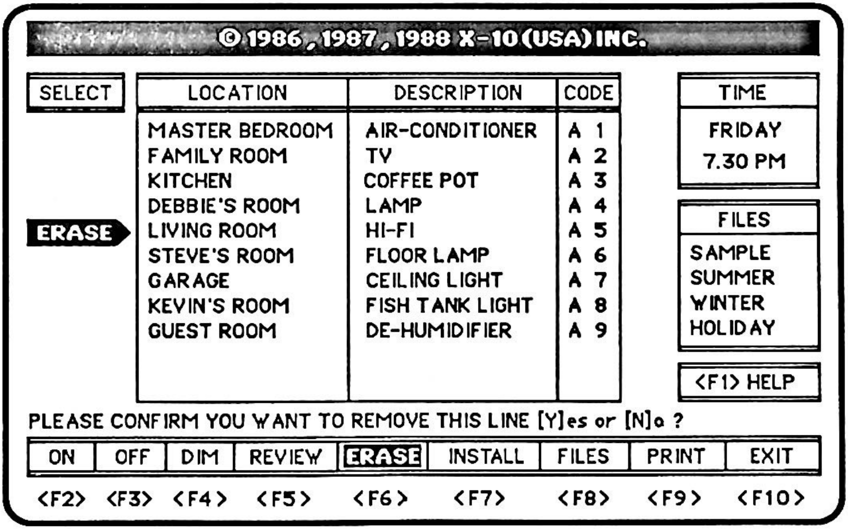
Enter the CODE (A 9):

SELECT
INSTALL
<F1> HELP
ON <F2>
OFF <F3>
DIM <F4>
REVIEW <F5>
ERASE <F6>
INSTALL <F7>
FILES <F8>
PRINT <F9>
EXIT <F10>

Figure 6.

ERASE

To ERASE an entry from both the screen and the Interface, use the UP and DOWN cursor keys to move the POINTER to the entry to be erased. Select ERASE with the LEFT and RIGHT cursor keys and RETURN (or with <F6>). You are asked to confirm that you want to erase this entry and are given the option of choosing (Y)es or (N)o. Erasing an entry will clear it from the screen and from the Interface and will also delete all programmed times for that entry. See Figure 7.


© 1986, 1987, 1988 X-10 (USA) INC.
SELECT
ERASE
TIME
FILES
SAMPLE
SUMMER
WINTER
HOLIDAY
<F1> HELP
ON
OFF
DIM
REVIEW
ERASE
INSTALL
FILES
PRINT
EXIT
<F2>
<F3>
<F4>
<F5>
<F6>
<F7>
<F8>
<F9>
<F10>

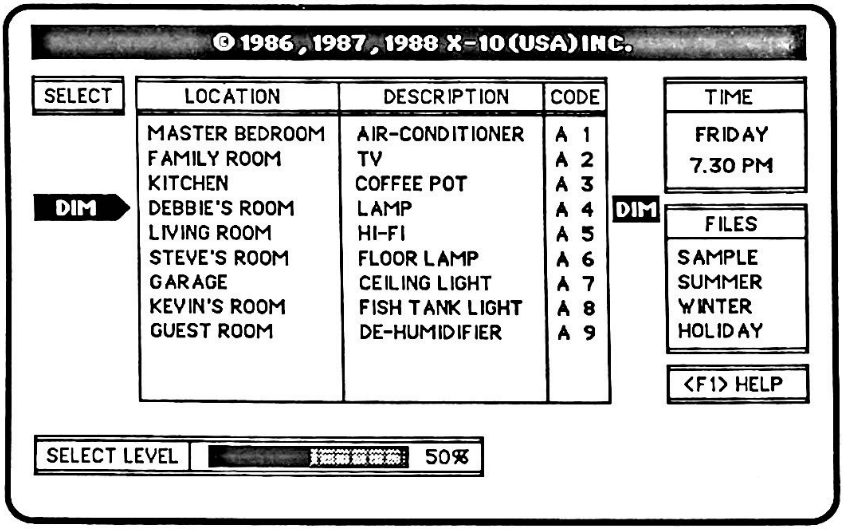
LOCATION	DESCRIPTION	CODE
MASTER BEDROOM	AIR-CONDITIONER	A 1
FAMILY ROOM	TV	A 2
KITCHEN	COFFEE POT	A 3
DEBBIE'S ROOM	LAMP	A 4
LIVING ROOM	HI-FI	A 5
STEVE'S ROOM	FLOOR LAMP	A 6
GARAGE	CEILING LIGHT	A 7
KEVIN'S ROOM	FISH TANK LIGHT	A 8
GUEST ROOM	DE-HUMIDIFIER	A 9

TIME
FRIDAY
7.30 PM

PLEASE CONFIRM YOU WANT TO REMOVE THIS LINE [Y]es or [N]o ?

Figure 7.

After installing the LOCATION, DESCRIPTION and X-10 CODE of a light or appliance to be controlled, you are ready to control it (or program it). Use the UP and DOWN cursor keys to position the POINTER next to the light or appliance you wish to control. Use the LEFT and RIGHT cursor keys to select whether you wish to turn the light or appliance ON or OFF; or DIM it (lights only). Then press RETURN. You can also use the function keys <F2>, <F3> <F4> etc. in which case you don't need to press RETURN. If you select DIM, use the LEFT and RIGHT cursor keys to select the intensity you require, then press RETURN. See Figure 8.



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SELECT	LOCATION	DESCRIPTION	CODE	
	MASTER BEDROOM	AIR-CONDITIONER	A 1	
	FAMILY ROOM	TV	A 2	
	KITCHEN	COFFEE POT	A 3	
DIM	DEBBIE'S ROOM	LAMP	A 4	DIM
	LIVING ROOM	HI-FI	A 5	
	STEVE'S ROOM	FLOOR LAMP	A 6	
	GARAGE	CEILING LIGHT	A 7	
	KEVIN'S ROOM	FISH TANK LIGHT	A 8	
	GUEST ROOM	DE-HUMIDIFIER	A 9	

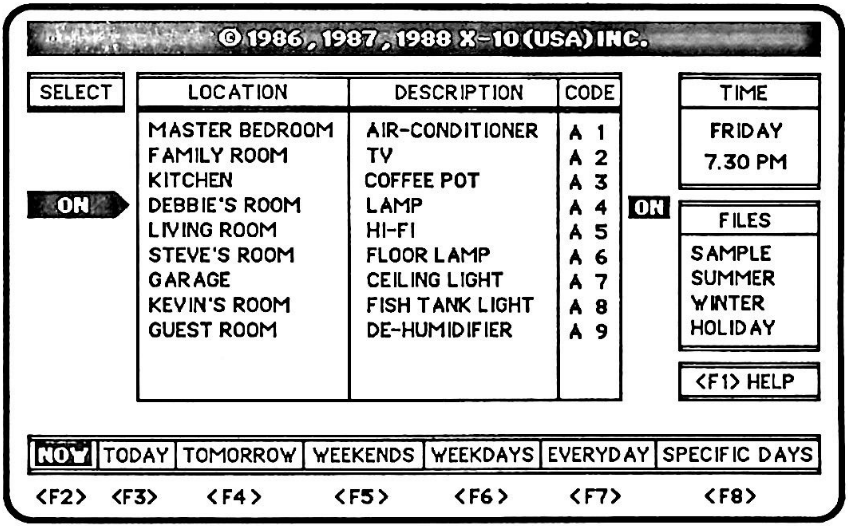
TIME
FRIDAY
7.30 PM

FILES
SAMPLE
SUMMER
WINTER
HOLIDAY

SELECT LEVEL 50%

Figure 8.

After choosing ON or OFF or DIM, the prompt line asks you to choose **NOW, TODAY, TOMORROW, WEEKENDS, WEEKDAYS, EVERYDAY or SPECIFIC DAYS.** See Figure 9.


© 1986, 1987, 1988 X-10 (USA) INC.
SELECT
ON
ON
TIME
FILES
SAMPLE
SUMMER
WINTER
HOLIDAY
<F1> HELP
NOW
TODAY
TOMORROW
WEEKENDS
WEEKDAYS
EVERYDAY
SPECIFIC DAYS
<F2>
<F3>
<F4>
<F5>
<F6>
<F7>
<F8>

LOCATION	DESCRIPTION	CODE
MASTER BEDROOM	AIR-CONDITIONER	A 1
FAMILY ROOM	TV	A 2
KITCHEN	COFFEE POT	A 3
DEBBIE'S ROOM	LAMP	A 4
LIVING ROOM	HI-FI	A 5
STEVE'S ROOM	FLOOR LAMP	A 6
GARAGE	CEILING LIGHT	A 7
KEVIN'S ROOM	FISH TANK LIGHT	A 8
GUEST ROOM	DE-HUMIDIFIER	A 9

TIME: FRIDAY 7.30 PM

Figure 9.

You may choose any one of these with the LEFT and RIGHT cursor keys and RETURN or with the function keys, and the descriptions on pages 22, 23 and 24 are what will happen in each case.

NOW:

If you select NOW the light or appliance will go ON or OFF immediately.

TODAY:

If you select TODAY, you will be asked to enter the time later today when you want that particular light/appliance to go on or off. Enter the time in the format shown and then press RETURN. That particular light/appliance will then go on or off at that time TODAY ONLY.

TOMORROW:

If you select TOMORROW, you can enter an on or off time which will occur at the specified time tomorrow instead of today. Both today and tomorrow are "once only" events and will be cleared from memory at approximately 4 minutes past midnight of that day.

WEEKENDS:
If you select WEEKENDS, any event programmed will occur every Saturday and Sunday of every week, continuously.

WEEKDAYS:
If you select WEEKDAYS, any event programmed will occur EVERY Monday, Tuesday, Wednesday, Thursday and Friday of every week, continuously.

EVERYDAY :
If you select EVERYDAY, any event programmed will occur EVERY DAY of every week, continuously.

In the above three modes (and SPECIFIC DAYS mode), you wil be asked after setting the time, the question, REGULAR or SECURITY. If you select REGULAR (with the LEFT and RIGHT cursor keys and RETURN) then the events will happen at **exactly** the times you program them, on the days you program them. If you choose SECURITY these events will occur within the hour of your programmed time but will be at a slightly different time each day (to give your home a lived in appearance).

For example: If the programmed time is 8:17 in the SECURITY mode, the actual time of the event is at 8:17 the first day and any time between 8:00 and 9:00 the rest of the days. Security is only available in WEEKENDS, WEEKDAYS, EVERYDAY, and SPECIFIC DAYS modes.

SPECIFIC DAYS:

If you choose this mode you will first be asked to choose the DAY(S) you require. You choose one or more of the 7 days with the LEFT and RIGHT cursor keys and RETURN. The days chosen will be shown as being selected. When you have chosen all the days you require, select CONFIRM and press RETURN.

You then enter the time as in previous modes. You then choose REGULAR or SECURITY. That particular light/appliance will then go ON or OFF at the specified time on each of the chosen days, every week (slightly different time each day if you chose SECURITY).

After setting an ON time in any of the above modes (except NOW) you are asked if you want to set an OFF time (and vice versa). You can enter multiple ON and OFF times and you can set these to happen in any mode. For example, the porch light could go on TODAY at 6:00 PM and off TOMORROW at 5:00 AM.; or the stereo could go on EVERY WEEKDAY at 7:00 AM and off EVERYDAY at 11:00 PM. You may also program multiple ON and/or OFF times. e.g. ON at 7:00 PM, OFF at 8:00 PM, OFF again at 9:00 PM and OFF again at 10:00 PM (useful if you have kids who keep leaving lights on).

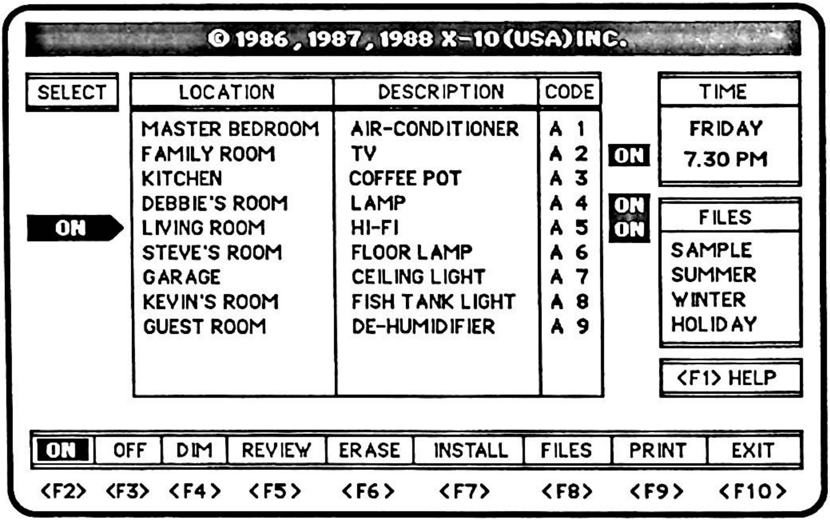
Note. If you select all the days in the SPECIFIC DAYS mode; when you review the event in the REVIEW mode it will be shown as EVERY DAY. Similar for WEEKDAYS and WEEKENDS.

The Interface can store up to 128 timed EVENTS and an EVENT can consist of up to 16 lights and/or appliances GROUPED together. GROUPING makes programming easier by reducing steps and makes maximum use of the memory in the Interface; i.e. if you program A1 to go ON at 7.00 PM EVERYDAY and then program A2 to go ON at 7.00 PM EVERYDAY, this is stored as two EVENTS. However, you can program A1 thru A16 to go ON at 7.00 PM EVERYDAY and by GROUPING them this is stored as one EVENT.

To GROUP lights and appliances, select the first cell to be GROUPED, then select ON, OFF or DIM; **don't** press RETURN but instead press the + key on the computer keyboard. Now select the next cell to be GROUPED and again press the + key. Continue GROUPING like this and then press RETURN when you have selected all the cells which you wish to be GROUPED. Cells GROUPED thus will have ON **or** OFF **or** DIM displayed next to them. You can only GROUP all ON's together **or** all OFF's together **or** all DIM's together. See Figure 10.

You can remove a cell from the GROUP (before pressing RETURN) by selecting the cell and then pressing the - (minus) key on the computer keyboard.

The software allows you to GROUP more than 16 lights and/or appliances together (up to 256) but these will be stored in the interface as separate EVENTS (an EVENT is up to 16 Modules ON THE SAME HOUSECODE).


© 1986, 1987, 1988 X-10 (USA) INC.
ON
OFF
DIM
REVIEW
ERASE
INSTALL
FILES
PRINT
EXIT
<F2>
<F3>
<F4>
<F5>
<F6>
<F7>
<F8>
<F9>
<F10>
<F1> HELP

SELECT	LOCATION	DESCRIPTION	CODE	
	MASTER BEDROOM	AIR-CONDITIONER	A 1	
	FAMILY ROOM	TV	A 2	ON
	KITCHEN	COFFEE POT	A 3	
	DEBBIE'S ROOM	LAMP	A 4	ON
ON	LIVING ROOM	HI-FI	A 5	ON
	STEVE'S ROOM	FLOOR LAMP	A 6	
	GARAGE	CEILING LIGHT	A 7	
	KEVIN'S ROOM	FISH TANK LIGHT	A 8	
	GUEST ROOM	DE-HUMIDIFIER	A 9	

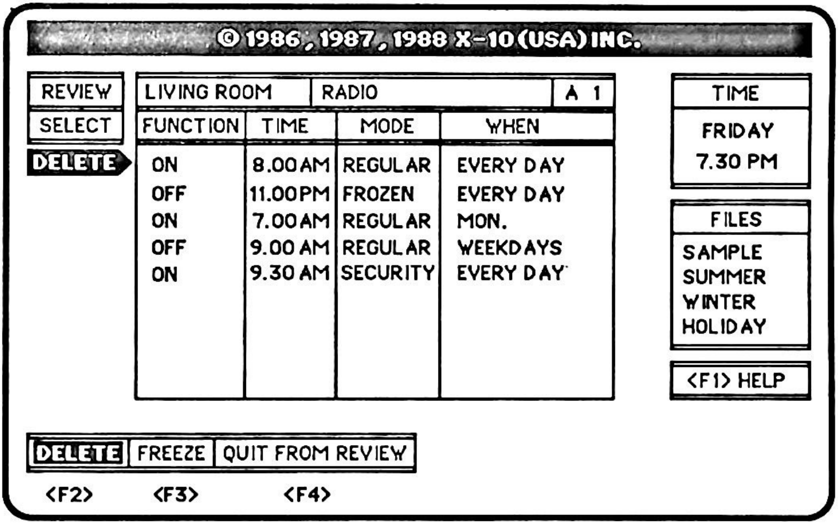
TIME
FRIDAY
7.30 PM

FILES
SAMPLE
SUMMER
WINTER
HOLIDAY

Figure10.

Cells GROUPED together will have ON, OFF or DIM displayed next to them.

Cells which have timed events programmed are displayed in **BOLD**. You may REVIEW the timed events for an entry or "cell" which is displayed in **BOLD** by moving the POINTER to that cell and then selecting REVIEW with the LEFT and RIGHT cursor keys (or with <F5>). The screen will then show a list of all the timed events for the selected light or appliance. See Figure 10.


© 1986, 1987, 1988 X-10 (USA) INC.
REVIEW
SELECT
DELETE
TIME
FRIDAY
7.30 PM
FILES
SAMPLE
SUMMER
WINTER
HOLIDAY
<F1> HELP
DELETE
FREEZE
QUIT FROM REVIEW
<F2>
<F3>
<F4>

LIVING ROOM RADIO A 1

FUNCTION	TIME	MODE	WHEN
ON	8.00 AM	REGULAR	EVERY DAY
OFF	11.00 PM	FROZEN	EVERY DAY
ON	7.00 AM	REGULAR	MON.
OFF	9.00 AM	REGULAR	WEEKDAYS
ON	9.30 AM	SECURITY	EVERY DAY

Figure 10.

You can select a cell and DELETE an event which will remove it from both the screen and the interface.

If you select FREEZE, the selected EVENT will be FROZEN; i.e. the program will suspend the event which will not happen again until you **UN**FREEZE it. To **UN**FREEZE an event, select it with the UP and DOWN cursor keys and then select FREEZE. Selecting FREEZE will FREEZE an **UN**FROZEN event or **UN**FREEZE a FROZEN event i.e. it toggles. You can only FREEZE events programmed as WEEKDAYS, WEEKENDS, EVERY DAY or SPECIFIC DAYS. FREEZE does not affect NOW, TODAY or TOMORROW.

You can Review the timed events for **other** programmed lights and appliances while still in the Review mode, without having to go back to the main screen to select a cell which is displayed in **Bold.** Once in the Review mode you can use the UP and DOWN cursor keys while holding down the SHIFT key, to scroll through the programmed events. The Location, Description and X-10 code of the light or appliance being reviewed will appear at the top of the screen as you scroll through the programmed lights and appliances and the timed events associated with that light or appliance will be displayed in the review window below it.

When you have installed all Modules, set all desired times and are ready to leave the program, select <F10>. This will take you to a blank screen displaying the DOS prompt. You may then turn off the computer or use it for another application.

You may disconnect the Interface from the computer if you wish (you must of course leave the Interface plugged into a 120 volt AC outlet to control your home). If you installed a 9 volt alkaline battery in your Interface, you may unplug it to move it to another room in your house. All timed events and Module information will be stored in the Interface which will control your home automatically and will only need to be re-connected to the computer to make changes to timed events or to install more Modules.

When you leave the program by selecting EXIT, the **names and locations** of the Modules you have installed are automatically stored on the disk as a file called X10.DAT. This file is reloaded the next time you load the program. The timed events stored in the Interface are also "uploaded" at this time. You may however, before exiting the program, wish to first save your schedule of events to disk. Selecting FILES (see page 30) lets you save the **names and locations** and the **timed events** as a disk file. This will enable you to reload your schedule into the Interface if it is lost due to a power outage with no battery in the Interface. You may also wish to have different schedules for different times of the year.

30 SAVING FILES TO DISK

You may save your entire schedule of events i.e. the contents of the Interface, as a disk file and save as many files as you wish. You could for example have different schedules for different times of the year. A SUMMER schedule, a WINTER schedule etc.

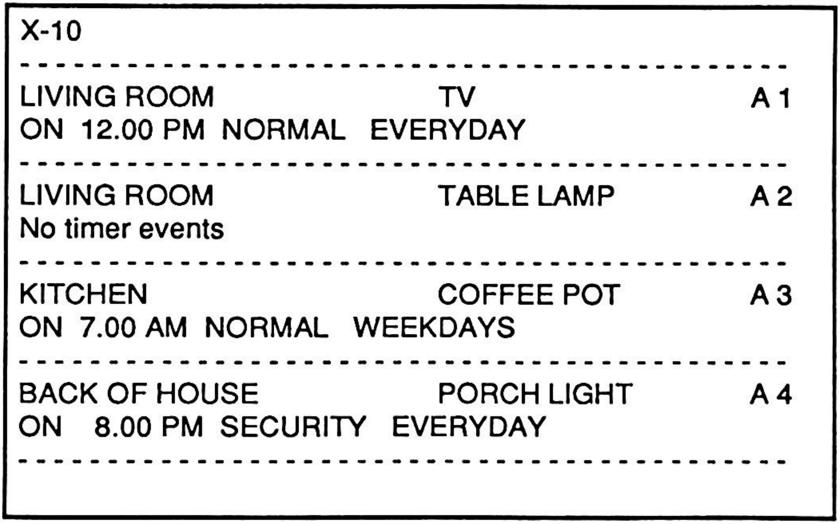
When you wish to change the entire program in the Interface you need only to LOAD a new file from the disk. This file is then automatically sent to the interface and **COMPLETELY REPLACES THE CONTENTS OF THE INTERFACE.** The previous contents are lost.

To do this select FILES using the LEFT and RIGHT cursor keys and RETURN (or <F8>). You are then asked if you want to LOAD, SAVE or DELETE a file. Select which you require and then press RETURN. Enter the name of the file you wish to LOAD, SAVE or DELETE and press RETURN. If you wish you can LOAD the file "SAMPLE" which will serve as a demonstration of how events can be entered into the program.

You can save as many files as you wish and the first 5 files will be displayed in the main window of the program as a reminder of what files you have stored on the disk. If you save more than 5 files you will need to look at the directory of your disk to see what they are called. A file entered as ANYTHING is stored as ANYTHING.X10.

To send the current file to the printer select PRINT with the LEFT and RIGHT cursor keys and then press RETURN (or press <F9>). If the printer is not connected or not switched on the screen will display "CHECK PRINTER. TRY AGAIN Y/N".

The printout will look like that shown in Figure 11.



```
X-10
-----------------------------------------------------
LIVING ROOM                       TV                  A 1
ON  12.00 PM  NORMAL   EVERYDAY
-----------------------------------------------------
LIVING ROOM                       TABLE LAMP          A 2
No timer events
-----------------------------------------------------
KITCHEN                           COFFEE POT          A 3
ON  7.00 AM  NORMAL   WEEKDAYS
-----------------------------------------------------
BACK OF HOUSE                     PORCH LIGHT         A 4
ON   8.00 PM  SECURITY   EVERYDAY
-----------------------------------------------------
```

Figure 11.

The Interface has the capability of sending all 256 X-10 codes (A thru P x 1 thru 16). The *X-10 Home Control Software* for the IBM™ can address all 256 codes from the keyboard while the Interface is connected to the computer. Manual control of the first 8 unit codes on the Base Housecode is provided from the 8 rocker keys on the Interface whether or not the Interface is connected to the computer. There are labels showing pictures of typical lights and appliances included with your *Home Control Interface*. You can place these labels on top of the rocker keys on the Interface to remind you what lights and appliances are controlled by the rocker keys (on the Base Housecode).

Manual control from other locations in your home is possible by purchasing additional *X-10 Mini Controllers* each of which can control up to 8 Modules manually, and can DIM and BRIGHTEN lights from their keyboards. There is also a *Maxi Controller* which can control up to 16 Modules. There is even a controller which allows you to control up to 8 Modules over the telephone, from anywhere in the world! See pages 40 and 41 for types of *X-10* Controllers and Modules available.

You can also turn on lamps and appliances connected to *X-10* Modules by operating the ON-OFF switch on the light or appliance. Just turn the switch off and on again once or twice and the Module will turn on. You must however leave the switch in the ON position to be able to control the Module from the Interface or from any other *X-10* Controller.

The *X-10 Home Control* disk also contains a demo version of the *X-10 Home Control* program called DEMO.EXE. This version will run even if the *Home Control Interface* is not connected to the computer. The demo program is a stand alone program which will do everything that X10.EXE will do (except enable the Interface to transmit). Both programs share the working files X10.DAT and SETUP.D10. Schedules may be entered while in the demo program and saved to disk to be accessed later from X10.EXE and then downloaded to the interface.

To run the demo program:

A. Insert a copy of DOS 2.0 or 2.1 into drive A.
B. Turn the computer on.
C. Wait about 30 seconds for the prompt asking you to enter the new date. Enter this in the format shown e.g. 4-22-91 and press RETURN.
D. You are now asked to enter the new time. Enter this in the format shown e.g. 15:45 and press RETURN.
E. Remove the DOS disk.
F. Insert the *X-10 Home Control* disk in drive A.
G. Type DEMO then press RETURN.

34 SETTING COM PORT & DISPLAY COLOR

The *X-10 Home Control Software* is set to operate the *X-10 Home Control Interface* via COM 1 communication port. If you would like to use another COM port, you will need to run the SETUP program which is included on the *X-10 Home Control* disk. This program also lets you choose the display background and foreground colors.

To do this:

A. Insert a copy of DOS 2.0 or 2.1 into drive A.
B. Turn the computer on.
C. Wait about 30 seconds for the prompt asking you to enter the new date. Enter this in the format shown e.g. 4-22-91 and press RETURN.
D. You are now asked to enter the new time. Enter this in the format shown e.g. 15:45 and press RETURN.
E. Remove the DOS disk.
F. Insert the *X-10 Home Control* disk in drive A.
G. Type SETUP then press RETURN.

The program will display a screen giving you the option of changing the COM port and screen colors. Select what you want to change (using the up and down cursor keys) and make your changes (using the left and right cursor keys), then select EXIT and press RETURN.

GLOSSARY OF TERMS

BASE HOUSECODE:	The rocker keys on the Interface operate on the Base Housecode. The Base Housecode is set to "A" when you first power up the Interface but it can be changed in the INSTALL mode.
BOOT:	Means to start the program, either by turning on the computer with the disk in the drive or by typing X-10 when in DOS.
CURSOR:	Highlighted area moved with the arrow keys on the computer keyboard.
DATA:	Timed events and Module information stored in the Interface.
DELETE:	Removes a timed event for a particular light or appliance when in the REVIEW mode. Removes a complete schedule of events (or File) when in the FILES mode.
DOWN-LOAD:	The transfer of data from the computer to the Interface. This occurs when you complete an operation by pressing the return key on the computer keyboard.

ENTER:	This means press the return key on the computer keyboard.
ERASE:	Removes the information representing a light or appliance. Also removes any timed events for that light or appliance.
ESC:	The Escape key on the computer. Used to move back to the previous step in the program.
EVENT:	Any number of lights or appliances (up to16), on the same Housecode, can be programmed to go on or off, at one particular time, on any number of days. This constitutes ONE event. For example, unit codes 1, 4, 9 and 14 programmed to go ON at 7:30 PM on Monday, Wednesday and Friday is just one event and 128 timed events can be programmed.
EVERYDAY:	Selected after choosing to turn on or off a light or appliance. Allows you to program an event to happen every day at the same time (slightly different each day if SECURITY is chosen).

EVERY WEEKDAY:	Selected after choosing to turn on or off a light or appliance. Allows you to program an event to happen every weekday at the same time (slightly different each day if SECURITY is chosen).
EVERY WEEKEND:	Selected after choosing to turn on or off a light or appliance. Allows you to program an event to happen every weekend at the same time (slightly different each day if SECURITY is chosen).
GROUP:	Selected after choosing to turn on or off a light or appliance. You then use the + key on the computer keyboard to add other lights and appliances to the GROUP and operate or program them as one EVENT. Use the - (minus) key to remove lights and appliances from the GROUP.
HOUSECODE:	All *X-10* Modules and manual controllers are normally set so that their Housecode dials are the same letter. The Interface is normally set to Housecode "A" but it can be changed when you first load the program.

INSTALL:	In this mode you can enter the names, locations and *X-10* codes of lights and appliances to be controlled.
NOW:	Selected after choosing a light or appliance followed by ON, OFF or DIM, will turn it on or off immediately.
REVIEW:	Selected after choosing a highlighted entry (**Bold**). Allows you to look at each event programmed for a particular light or appliance.
RS-232 PORT:	Socket on the back of your PC to which the Interface is connected for programming.
SECURITY:	If a light or appliance is programmed to go on at 7:42 p.m. in the Security mode, it will go on at 7:42 p.m. the first day and any time between 7:00 p.m. and 8:00 p.m. the rest of the days (different each day). Security is only available in WEEKENDS, WEEKDAYS, EVERY DAY, and SPECIFIC DAYS modes.
SPECIFIC DAYS:	Selected after choosing to turn on or off a light or appliance. Allows you to specify the days that you want an event to happen, e.g. on Tuesdays and Thursdays only (every Tuesday and Thursday).

TODAY:	Selected after choosing to turn on or off a light or appliance. Allows you to program a time at which that light or appliance will go on or off later TODAY. Will happen only once today and then the event will be cleared from memory at approximately 4 minutes past midnight today.
TOMORROW:	Selected after choosing to turn on or off a light or appliance. Allows you to program a time at which that light or appliance will go on or off TOMORROW. Will happen only once tomorrow and then the event will be cleared from memory at approximately 4 minutes past midnight tomorrow.
UNIT CODE:	Each *X-10* Module is set to a different UNIT CODE (between 1 and 16). When the Interface sends a particular Unit Code, only Modules set to that code will respond.
UP-LOAD:	Transfer of data from the Interface to the computer. Occurs when the Interface is reconnected to the computer and the program is loaded.

Controllers	**Model #**	**Description**
Home Control Interface	CP290M CP290P CP290A CP290C	Works with Macintosh, IBM, Apple IIe/IIc or Commodore 64/128. Controls up to 256 *X-10* Modules and can be programmed for 128 timed events. Has Battery Back-Up.
Sundowner	SD533	Turns on up to 4 *X-10* Modules at dusk and turns them off again at dawn - automatically.
Mini Timer	MT522	A Mini Controller and Timer all in one! Set times for 4 Modules and control 8 Instantly. Dims lights too. Has Battery Back-Up.
Maxi Controller	SC503	For instant control of up to 16 Modules, can also brighten and dim lights.
Mini Controller	MC460	For instant control of up to 8 Modules, can also brighten and dim lights.
Telephone Responder	TR551	Controls 10 Modules from any phone in the world! Flashes lights when phone rings.
Thermostat Set-back	TH2807	Installs under ANY thermostat to set-back heating or air conditioning. AM486 required.
Wireless Remote Control System	RC5000 includes RT504 & RR501	Transmitter controls Transceiver Module from **inside** or **outside** your home AND Transceiver sends signals to up to 8 standard *X-10* Modules.

Modules	**Model #**	**Description**
Lamp Module	LM465	For **Incandescent** lamps up to 300 watts. Can be dimmed and brightened.
Wall Switch Module	WS467	For **Incandescent** lights up to 500 watts. Can be dimmed and brightened.
3 - Way Wall Switch Module	WS4777	For **Incandescent** lights up to 500 watts. which are controlled by two or more switches. Can be dimmed and brightened.
Appliance Module	AM486	2 pin. For controlling a TV, fan, stereo, coffee pot etc.
Appliance Module	AM466	3 pin grounded. For controlling appliances which have a 3 pin grounded plug.
Split Receptacle	SR227	Replaces existing wall outlet. For ANY appliance up to 15 Amps unrestricted.
Heavy Duty Appliance Module	HD243	For **220V 15A** appliances such as window air conditioners, water heaters etc. For split phase wiring only, won't work on 3 phase.
Heavy Duty Appliance Module	HD245	For **220V 20A** appliances such as window air conditioners, water heaters etc. For split phase wiring only, won't work on 3 phase.

42 SOME DON'TS

DON'T Use a Wall Switch Module to control a Fluorescent light, a fan, or any kind of appliance. This could cause damage to the Module and/or the light/appliance.

DON'T Use a Wall Switch Module to control an outlet unless you are sure no one will plug an appliance (a vacuum cleaner for example) into the outlet. See above.

DON'T Use a Lamp Module to control a fluorescent light, a fan, or any kind of appliance.

DON'T Use a Lamp Module or a Wall Switch Module to control a lamp or fixture which already has a dimmer on it.

DON'T Use a Module to control something which would be dangerous if it were turned on remotely while unattended e.g. an empty coffee pot, an electric fan with poorly protected blades etc.

DON'T Use a Wall Switch Module for lamps less than 60 watts.

DON'T Leave a wireless intercom or baby monitor in the permanent transmit (or talk) mode. It's transmissions could "block out" transmissions from *X-10* Controllers.

DON'T Exceed the rating of the Modules, these are:
Lamp Module - 300 watts incandescent only.
Wall Switch Module - 500 watts incandescent only.
Appliance Module - appliances rated 15 Amp. resistive (such as coffee pots and heaters) or 1/3 H.P. motor load, or 400 watts for TV sets or 500 watts for lamps, because of the "inrush current" from a cold lamp.

1. If a Module won't go on or off manually from the rocker keys:

Check that you have power to the outlet controlling the Module and the switch on the light or appliance is ON.

Check that the red light on the Interface goes on when you press a rocker key.

Check that the Unit Code and Housecode on the Module are set correctly. The Housecode on the Interface will be "A" unless you changed it when you set up the program.

Try plugging the Module and the Interface into the same outlet. If it doesn't work in ANY outlet, not even with the Module and the Interface in the same duplex receptacle (top and bottom) replace the Module. If it works in some outlets but not in others, contact X-10 for help.

2. If the Interface appears to be "completely dead".

Before returning it, unplug it from the 120V outlet, remove the battery and wait 10 seconds. Then reconnect it to the outlet, re-install the battery and see if it works. Note, you will have lost all of your programmed information by doing this but if the Interface now works this indicates that the microprocessor was "latched up", a rare condition which can occur with CMOS circuitry.

3. If a Module doesn't go on or off at the programmed times.

First check that the Module works from the Interface rocker keys, see No. 1 above.
Connect the Interface to the computer and review the program for the Module in question. Check that you entered the time, day and AM/PM correctly.
If you find NO PROGRAM i.e no timed events etc. check the battery in the Interface. You may have had a power outage, and if the battery is dead, you could have lost all of your program.
Check that the clock (time and day) is set correctly. Check that the Housecode is set correctly.

INTERCOM SYSTEMS.

Intercom systems which send voice signals over existing electrical wiring may interfere with the operation of your Interface when the intercom is in use. If the Intercom system has its own separate wiring it will not interfere with the Interface.

POWER INTERRUPTIONS.

Your Interface has battery back up (if you installed a 9V alkaline battery) to protect your program in the event of a power outage. However, when the power is restored after an outage, Lamp Modules and Wall Switch Modules will normally be OFF. Appliance Modules will stay as they were before the interruption.

You only need to refer to this section of the manual if you wish to write your own software.

INTRODUCTION.

It is assumed that you are familiar with Basic programming and some knowledge of Binary programming will also be useful. This section of the manual should be sufficient to let you write simple Basic programs to set and read the Real Time Clock in the Interface and to turn Modules on and off manually etc. For more complex programs involving "Timed Events" etc. you should refer to the Programming Guide for Advanced Programmers which deals in more detail with Binary and Hex programming.

The Utility Program is written in Basic and stored in ASCII format to allow merging with an existing Basic Program. This lets you write programs in Basic and use sub-routines to perform functions such as setting the clock, uploading or downloading timer events etc.

USING THE UTILITY PROGRAM

The Utility Program sub-routines occupy Basic lines 19999 - 30720 and therefore any program using the sub-routines should leave these lines free. Alternatively you could re-number the sub-routines remembering to update the GOSUB addresses also.

There are two ways to load the Utilities.

1. If you are writing a completely new program, you can just LOAD **"X10"**

2. If you are combining the Utilities with an existing program, (e.g. MY PROGRAM) you first load your existing program i.e. LOAD **"MY PROGRAM",** then merge the Utilities into the memory area by MERGE **"X10".** Once merged your program is ready to run.

NOTE. If you forget to merge the Utilities, your program will not run.

VARIABLES

Below is a list of variables used by the Utility program. These variables should only be used in your program to transfer data between the main program and the sub-routine and vice versa.

A
A$
ADDR1
ADDR2
ADDRESS
BTEMP
BASECODE
CHKSUM
CODCONV (16)
COUNT
DAY
EVENT
FTEMP
FUNCTION
GRAPH (2, 256)
HITEMP
HIUNIT
HOURS
HOUSECODE
LEVEL
LOUNIT
MINS
PORT
STATUS
TIM (8, 128)
XTEMP

48 SUB-ROUTINE LOCATIONS

The Utility Program has 9 sub-routines which give the Basic Programmer full control over the Interface. These are located at the following lines.

20000	Initializing the com. port/defining the variables.
20100	Setting the real time clock **in the Interface.**
20200	Setting the Base Housecode in the Interface.
20300	Reading the real time clock **from the Interface.**
20500	Sending an INSTANT on or off *X-10* code.
20800	Downloading a Timer Event to the Interface.
20900	Uploading ALL Timer Events from the Interface.
21000	Downloading Graphics Data to the Interface.
21100	Uploading ALL Graphics Data from the Interface

STATUS

The Utility sub-routines return a status value indicating the following:

If 'STATUS = 1' then 'GOSUB' was successful.
If 'STATUS = 0' then 'GOSUB' was successful but the Interface indicated that it had been powered down and contains no data.
If 'STATUS = -1' then 'GOSUB' was unsuccessful. This indicates that there may be a problem with the connections to the Interface or the Interface may not have power.

LINE 20000

This sub-routine initializes the communications port (COM1).

This sub-routine also assigns all the variables used within the utility sub-routines. It should be called at the beginning of a program and should **only be called once.** If called more than once an error will occur.

EXAMPLE

```
10          GOSUB 20000
            Rest of the Basic Program.

19999
  '
  '         Utilities
  '
30720
```

50 SETTING THE REAL TIME CLOCK

To set the real time clock **in the Interface.**

LINE 20100

Variables passed to the sub-routine.

DAY	(1-7)
HOURS	(0-23)
MINS	(0-59)

Variables passed from the sub-routine.

STATUS	(-1, 0, 1)

Before calling this sub-routine, first assign a value to DAY, HOURS and MINS. Then call the sub-routine. The values stored in DAY, HOURS and MINS will then be transferred to the Interface. On returning from the sub-routine the STATUS should be compared with the value -1 to ensure that the download was successful.

EXAMPLE

```
5    CLS:PRINT "Setting the real time clock"  : PRINT
10   GOSUB 20000
20   INPUT "Enter the DAY (1= Sun, 7=Sat) "; DAY
30   INPUT "Enter the HOURS (0-23) "; HOURS
40   INPUT "Enter the MINUTES (0-59) "; MINS
50   GOSUB 20100:IF STATUS =-1 THEN PRINT
     "*** ERROR***": END
60   PRINT:PRINT "The time has been set": END
```

LINE 20300

Variables passed to the sub-routine
NONE

Variables passed from the sub-routine

DAY	(1-7)
HOURS	(0-23)
MINS	(0-59)
STATUS	(-1, 0, 1)

To read the time from the Interface, call the sub-routine. The time will then be transferred to the variables DAY, HOURS and MINS, providing the STATUS is not returned -1.

EXAMPLE

```
10  GOSUB 20000
20  GOSUB 20300: IF STATUS =-1 THEN PRINT
    "***ERROR***" :END
30  PRINT "DAY = "; DAY; "HOURS = "; HOURS;
    "MINUTES = "; MINS
40  END
```

52 SETTING THE BASE HOUSECODE

LINE 20200

Variables passed to the sub-routine.
BASECODE (1-16)

Variables passed from the sub-routine.
STATUS (-1, 0, 1)

To set the Base Housecode in the Interface, first assign a value to BASECODE as shown below.

A=1 B=2 C=3 D=4
E=5 F=6 G=7 H=8
I=9 J=10 K=11 L=12
M=13 N=14 O=15 P=16

Then call the sub-routine to change the Base housecode in the Interface.

NOTE. calling this sub-routine will erase all the data stored in the Interface.

EXAMPLE

```
5    CLS:PRINT "Setting the base Housecode": PRINT
10   GOSUB 20000
20   INPUT "Enter Base Housecode"; A$:BASECODE=ASC
     (A$) - 64
30   GOSUB 20200: IF STATUS =-1 THEN PRINT
      "***ERROR***" :END
40   PRINT:PRINT "The Base Housecode has been set" :END
```

LINE 20500

Variables passed to the sub-routine.

FUNCTION

This is a number between 1 and 3. 1=ON 2=OFF 3=DIM.

LEVEL

This is a number between 0 and 15 which sets the intensity of the DIM command. If FUNCTION is set to 1 or 2, LEVEL will be ignored.

HOUSECODE

This is a value between 1 and 16 where A=1 and P=16.

LOUNIT

This is a bit mapped value corresponding to the unit codes 1 thru 8 as follows:

1=128 2=64 3=32 4=16
5=8 6=4 7=2 8=1

HIUNIT

This is a bit mapped value corresponding to the unit codes 9 thru 16 as follows:

9=128 10=64 11=32 12=16
13=8 14=4 15=2 16=1

Variables passed from the sub-routine.

STATUS	(-1, 0, 1)
FUNCTION	(1, 2, 3)
LOUNIT	(0 - 255)
HIUNIT	(0 - 255)
HOUSECODE	(0 - 16)
BASECODE	0 - 16)

To transmit an X-10 code instantly, you must first assign values to FUNCTION, LEVEL, HOUSECODE, LOUNIT and HIUNIT relating to the code to be sent; then call the sub-routine. If the STATUS is not -1, the sub-routine will return the values of FUNCTION, LEVEL, HOUSECODE, LOUNIT and HIUNIT as sent to the Interface. These values can then be used by your program to verify the code sent.

EXAMPLE

```
10  GOSUB 20000
20  LEVEL = 0
30  INPUT " Enter the FUNCTION (1=On 2=Off 3=Dim)"
    ; FUNCTION
40  IF FUNCTION=3 THEN PRINT :INPUT " Enter the
    LEVEL " ; LEVEL
50  PRINT:INPUT " Enter the HOUSECODE (A-P) " ; A$:
    HOUSECODE=ASC(A$) - 64
60  PRINT:INPUT " Enter the value for HIUNIT
    (0=NONE) " ; HIUNIT
70  PRINT:INPUT " Enter the value for LOUNIT
    (0=NONE) " ; LOUNIT
80  GOSUB 20500: IF STATUS =-1 THEN PRINT
    " *** ERROR***" : END
90  PRINT " The X-10 message has been sent" : END
```

LINE 21000

Variables passed to the sub-routine
ADDRESS (0 - 255)

Data stored in Basic array
GRAPH (0, ADDRESS) (0 - 254)
GRAPH (1, ADDRESS) (0 - 254)

Variables passed from the sub-routine
STATUS (-1, 0, 1)

This sub-routine takes the data stored in the Basic arrays GRAPH (0, ADDRESS) and GRAPH (1, ADDRESS) and transfers it to the RAM in the INTERFACE. NOTE - The values stored in these arrays should never equal 255. An error will occur if this happens.

EXAMPLE

```
10  CLS: PRINT " Downloading Graphics data " : PRINT
20  GOSUB 20000
30  INPUT " Enter the ADDRESS (0-255) " ; ADDRESS
40  PRINT : INPUT "DATA 1"; GRAPH (0,ADDRESS)
50  PRINT : INPUT "DATA 2"; GRAPH (1, ADDRESS)
60  GOSUB 21000 : IF STATUS =-1 THEN PRINT
    " ***ERROR*** " : END
70  PRINT " DONE " : END
```

LINE 21100

Variables passed to the sub-routine
NONE

Variables passed from the sub-routine
STATUS (-1, 0, 1)

Data stored in Basic array GRAPH (0, X)
GRAPH (1, X)

This sub-routine is used to request the Interface to upload ALL 256 pairs of GRAPHICS data and store them in a Basic arra GRAPH (0, X) and GRAPH (1, X) overwriting any data previously stored in the array.

EXAMPLE

```
10  CLS : PRINT " Uploading Graphics Data " : PRINT
20  GOSUB 20000
30  GOSUB 21100 : IF STATUS =-1 THEN PRINT
    " ***ERROR*** " : END
40  PRINT " DONE " : END
```

58 DOWNLOADING TIMER EVENTS

LINE 20800

Variables passed to the sub-routine.
ADDRESS (0 - 127)

Basic array.

TIM	(0, ADDRESS)	(Equals BYTE 20)
TIM	(1, ADDRESS)	(Equals BYTE 2 1)
TIM	(2, ADDRESS)	(Equals BYTE 2 2)
TIM	(3, ADDRESS)	(Equals BYTE 2 3)
TIM	(4, ADDRESS)	(Equals BYTE 2 4)
TIM	(5, ADDRESS)	(Equals BYTE 2 5)
TIM	(6, ADDRESS)	(Equals BYTE 2 6)
TIM	(7, ADDRESS)	(Equals BYTE 2 7)

Variables passed from the sub-routine.

STATUS (-1, 0, 1)

This sub-routine should only be used by programmers familiar with Binary Programming and the Timer Events downloading information on page 21 of the Programming Guide, supplied with the Interface.

First set up the arrays with the data relating to the timed events required, and then call the sub-routine. The timer events will be transferred to the Interface and a STATUS = 1 will be returned if the download was successful.

EXAMPLE

```
10  CLS : PRINT " Downloading a Timer Event " : PRINT
20  GOSUB 20000
30  INPUT " Enter the ADDRESS (0 - 127) " ; ADDRESS
40  FOR X = 1 to 7
50  PRINT " Enter the Data for BYTE"; 20+X; : INPUT
    TIM (X, ADDRESS) : NEXT X
60  GOSUB 20800 : IF STATUS =-1 THEN PRINT
    " *** ERROR *** " : END
70  PRINT " DONE " : END
```

60 UPLOADING TIMER EVENTS

LINE 20900

Variables passed to the sub-routine.
NONE

Variables passed from the sub-routine.

STATUS (-1, 0, 1)

Data stored in Basic array

TIM (0, X) .....TIM (7, X)

This sub-routine requests the Interface to upload ALL 128 Timer Events and store them in the Basic arrays TIM (0, X) thru TIM (7, X).

EXAMPLE

```
10  CLS : PRINT " Uploading Timer Event " : PRINT
20  GOSUB 20000
30  GOSUB 20900 : IF STATUS =-1 THEN PRINT
    " *** ERROR *** " : END
40  PRINT " DONE " : END
```

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- Reorient the antenna of the radio/TV experiencing the interference.
- Relocate the Interface with respect to the radio/TV.
- Move the Interface away from the radio/TV.
- Plug the Interface into a different outlet so that the Interface and the radio/TV are on different branch circuits.

If necessary, consult your dealer or an experienced radio/television technician for additional suggestions.

U.S.A.
X-10 (USA) Inc.,
91 Ruckman Rd., Box 420,
Closter, NJ 07624-0420.
(201)784-9700 or 1-800-526-0027.

Canada
X-10 Home Controls Inc.,
1200 Aerowood Drive, Unit 20,
Mississauga, Ontario L4W 2S7.
(416) 624-4446 or 1-800-387-3346.

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Printed in China

CP290P/991